

REMARKS

Claims 1-20 are pending in this application. By this Amendment, claims 1 and 15 are amended. No new matter is added. Reconsideration in view of the foregoing amendments and the following remarks is respectfully requested.

The Office Action continues to reject claims 1-6, 8-10, 12, 13 and 15-20 under 35 U.S.C. §102(b) over U.S. Patent No. 6,233,925 to Hirota et al. (Hirota '925). This rejection is respectfully traversed.

Claim 1 is amended to recite that a nitrogen oxides reducing section reduces an amount of nitrogen oxides occluded in an NOx catalyst before the temperature raising section is operated to raise the temperature of the NOx catalyst more than when the temperature of the NOx catalyst is not raised. Claim 15 is amended to recite an nitrogen oxides reducing step for reducing an amount of nitrogen oxides occluded in the NOx catalyst before said temperature raising step more than when the temperature of the NOx catalyst is not raised. These features are described in the specification at, for example, page 2, lines 25-31; page 4, lines 10-15.

That is, larger amount of nitrogen oxides occluded in an NOx catalyst is reduced before the temperature of the NOx catalyst is raised, than when a normal NOx reduction control of the NOx catalyst is performed. Therefore, smaller amount of nitrogen oxides might remain in the NOx catalyst before the temperature increase in the NOx catalyst than after the normal NOx reduction control of the NOx catalyst.

The Office Action alleges to col. 15, line 1-col. 16, line 59 of the reference discloses this feature. However, this section mainly relates to Hirota's teaching of its SOx discharge processing instead of the NOx discharge processing. Therefore, the Office Action's interpretation of the claim language in this respect appears improper.

Col. 19, line 18-col. 20, line 67 of Hirota '925 describes the NOx discharge processing that reduces the amount of NO₂ absorbed in the NOx catalyst. However, Hirota '925 does not specifically teach or suggest that the above-described feature. In particular, Hirota '925 does not teach or suggest that more amount of nitrogen oxides occluded in the NOx catalyst is reduced before the temperature raising section is operated to raise the temperature of the NOx catalyst more than when the temperature of the NOx catalyst is not raised.

Therefore, Applicants respectfully submit that claims 1 and 15 are patentably distinct from the applied art.

Claims 2-6, 16 and 17 are allowable at least for their dependence on claims 1 and 15, respectively, as well as for the additional features they recite.

Claim 8 recites a first reducing agent supplying section for supplying a reducing agent to said NOx catalyst when an amount of nitrogen oxides occluded in said NOx catalyst becomes more than or equal to a predetermined amount, and a second reducing agent supplying section for supplying an amount of said reducing agent more than that supplied by the first reducing agent supplying section to the NOx catalyst before the temperature raising section is operated to raise the temperature of the NOx catalyst. Claim 18 recites a nitrogen oxides reducing step for reducing an amount of nitrogen oxides occluded in the NOx catalyst by supplying a reducing agent to the NOx catalyst when the amount of nitrogen oxides occluded in the NOx catalyst becomes more than or equal to a predetermined amount, and an amount of reducing agent supplied to the NOx catalyst is increased in the nitrogen oxides reducing step before a temperature raising step.

Hirota '925 discloses at col. 15, lines 52-56 that the fuel injection amount for conducting sub-injection once in SOx discharge processing is set larger than that in NOx discharge processing to provide the richer air-fuel ratio of the exhaust gas than in NOx discharge processing. However, Hirota '925 teaches at col. 15, lines 1-12 that the temperature

during the SOx discharge processing must be higher than that during the NOx discharge processing. Therefore, Hirota '925 does not teach or suggest supplying an amount of the reducing agent more than that supplied in the first reducing agent supplying section to the NOx catalyst before the temperature raising section is operated to raise the temperature of the NOx catalyst. Accordingly, Applicants respectfully submit that claims 8 and 18 are patentably distinct from the applied art.

Claims 9, 10 and 19 are allowable at least for their respective dependence on the allowable based claims, as well as for the additional features they recite.

Claim 12 recites an estimating section for estimating an amount of nitrogen oxides occluded in the NOx catalyst, and an operation control section adapted to permit an operation of the temperature raising section when the amount of nitrogen oxides estimated by the estimating section is less than a predetermined amount. Claim 20 recites an estimating step for estimating an amount of nitrogen oxides occluded in an NOx catalyst disposed in an exhaust passage of the internal combustion engine, and a temperature raising step for raising the temperature of the NOx catalyst on the condition that the amount of nitrogen oxides estimated in the estimating step is less than a predetermined amount.

Although Hirota '925 teaches at col. 7, lines 49-67 that the amount of the NOx absorbed can be estimated, Hirata '925 does not specifically teach or suggest that operation control section permits an operation of the temperature raising section when the amount of nitrogen oxides estimated is less than a predetermined amount. As such, Applicants respectfully submit that claims 12 and 20 are patentably distinct from the applied art.

Claim 13 is allowable at least for its dependence on claim 12, as well as for the additional features recited.

At least for these reasons, Applicants respectfully request withdrawal of the rejection.

The Office Action also continues to reject claims 1-20 under 35 U.S.C. §102(b) over U.S. Patent No. 5,974,791 to Hirota et al. (Hirota '791). This rejection is respectfully traversed.

With respect to claims 1 and 15, similar to Hirota '925, Hirota '791 teaches at col. 6, lines 54-57, for example, that the temperature of NOx absorbent needs to be increased during the SOx releasing procedure than during the NOx release procedure. However, Hirota '791 does not specifically teach or suggest that more amount of nitrogen oxides occluded in the NOx catalyst is reduced before the temperature raising section is operated to raise the temperature of the NOx catalyst more than when the temperature of the NOx catalyst is not raised, as recited in claims 1 and 15. Accordingly, Applicants respectfully submit that claims 1 and 15 are patentably distinct from the applied art.

Claims 2-6, 16 and 17 are allowable at least for their dependence on claims 1 and 15, respectively, as well as for the additional features they recite.

With respect to claims 8 and 18, Hirota '791 teaches in Fig. 2 and at col. 9, lines 54-63, for example, that the NOx releasing process takes place when a NOx counter CNA, which represents the amount of NOx absorbed in the DPF 10a, is equal to or greater than a predetermined value CN_0 . Hirota '791 also teaches at col. 8, lines 63-67 that ECU 30 supplies electricity to the DPF 10a to raise the temperature of the DPF 10a to above a predetermined temperature and supplies reducing agent to the DPF 10a from the reducing agent supply unit 12. However, Hirota '791 does not specifically teach or suggest supplying an amount of the reducing agent more than that supplied in the first reducing agent supplying section to the NOx catalyst before the temperature is raised. Therefore, claims 8 and 18 are patentably distinct from the applied art.

Claims 9-11, 16 and 17 are allowable at least for their respective dependence on the allowable claims, as well as for the additional features they recite.

With respect to claims 12 and 20, as discussed above, Hirota '791 teaches that the NOx releasing operation is necessary when the NOx counter CNA is equal to or greater than the predetermined value CN₀. However, Hirota '791 does not specifically teach or suggest estimating the amount of nitrogen oxides occluded in the NOx catalyst and thus does not teach or suggest permitting an operation of the temperature raising section when the amount of nitrogen oxides estimated by the estimating section is less than a predetermined amount. As such, Applicants respectfully submit that claims 12 and 20 are patentably distinct from the applied art.

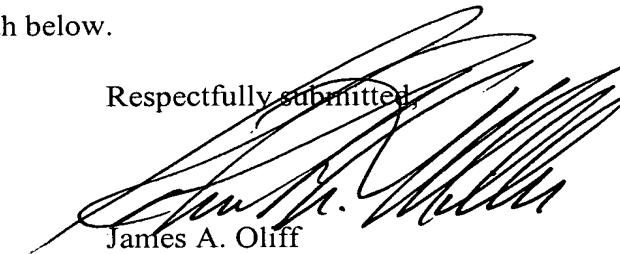
Claims 13 and 14 are allowable at least for their dependence on allowable claim 12, as well as for the additional features they recite.

Accordingly, at least for the reasons discussed above, Applicants respectfully request withdrawal of the rejection.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-20 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,


James A. Oliff
Registration No. 27,075

Robert A. Miller
Registration No. 32,771

JAO:KXH/tbh

Attachment:

Request for Continued Examination

Date: February 1, 2006

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

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